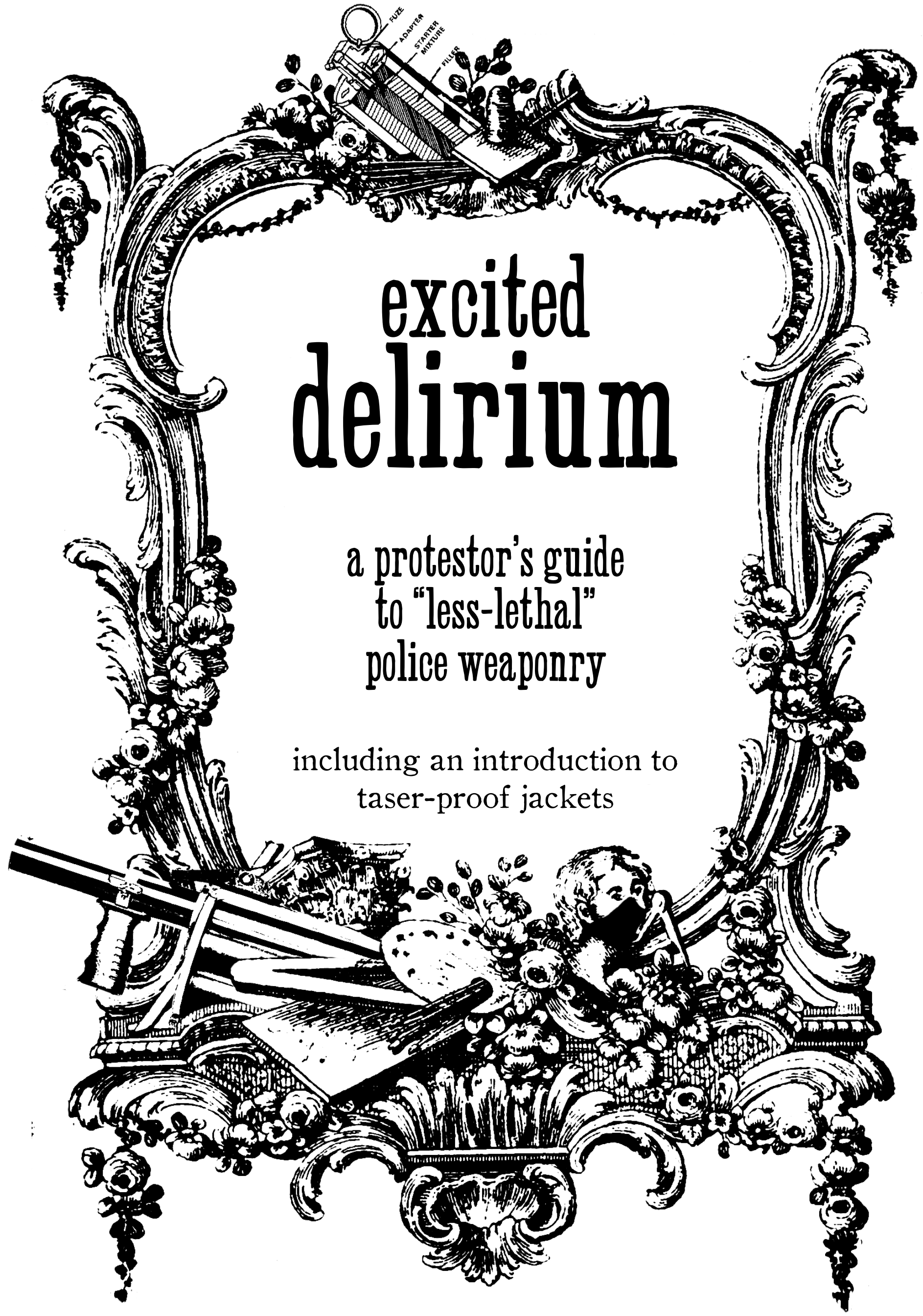
If you know the enemy and know yourself, you need not fear the result of a hundred battles. If you know yourself but not the enemy, for every victory gained you will also suffer a defeat. If you know neither the enemy nor yourself, you will succumb in every battle.

-Sun Tzu



excited delirium

a protestor's guide to "less-lethal" police weaponry

including an introduction to taser-proof jackets

version 1.1b

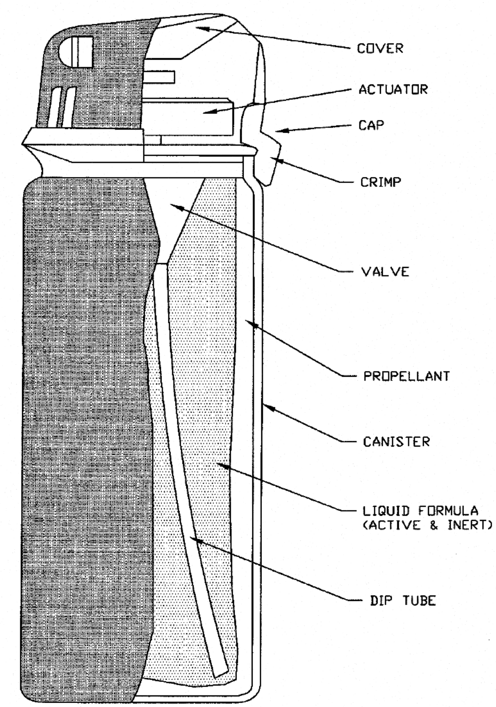
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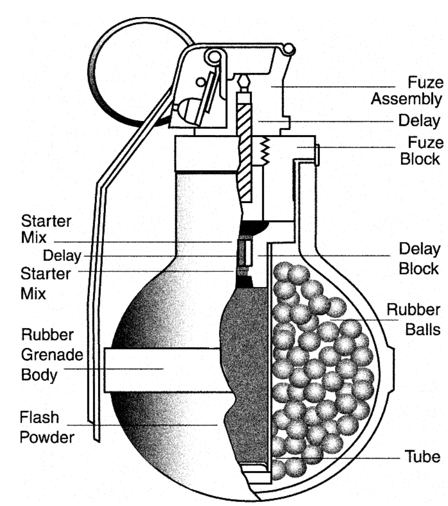
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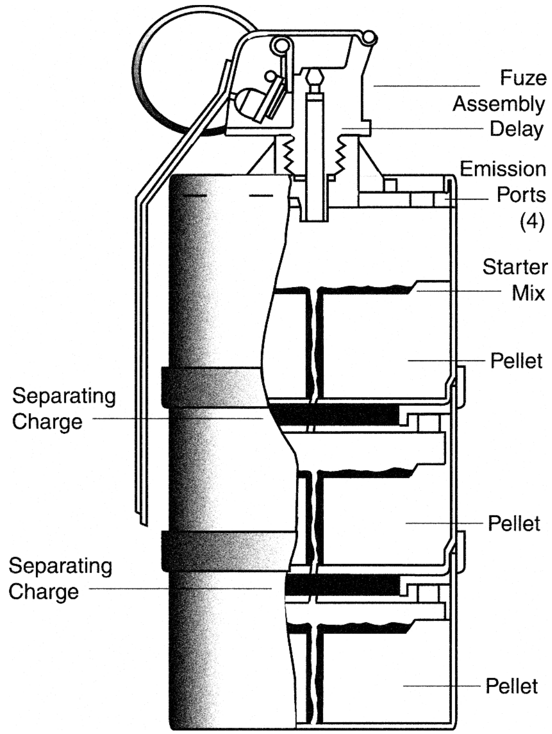
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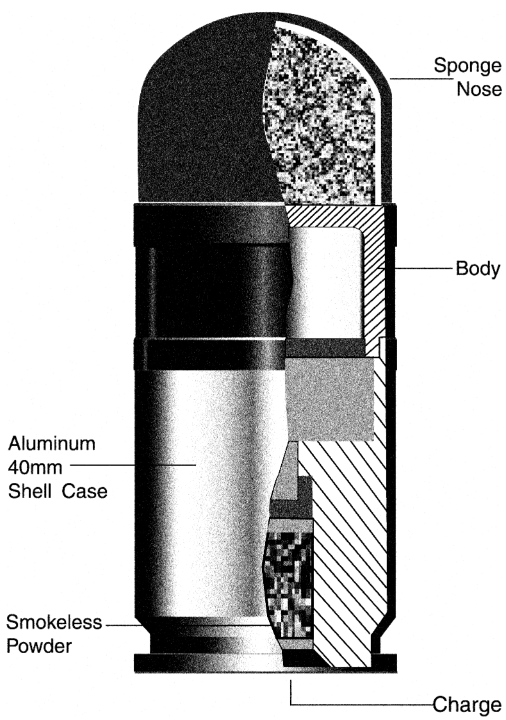
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final thoughts (clockwise from upper-left): triple-threat gas canister, MK-3 aerosol sprayer, 32 caliber Stinger grenade, sponge round.





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This work is intended for educational purposes. And while the information within is accurate to our knowledge, we don't have first-hand experience with more than a handful of these weapons. Do your own research and don't ever assume that you're invulnerable.

The government just *loves* technology. They always assume that every problem—whether social, martial, economic, or ecological—is just waiting for some magic device to solve it. This is a weakness of theirs.

This zine is filled with a lot of scary information. The phrase "non-lethal" is out and "less-lethal" is in—because that's just what these weapons are: a bit less lethal than being shot with a gun. Stun guns, teargas, baton rounds... these things are scary. But everything in here can be counteracted through DIY means. Most of this crap costs the state anywhere from $25-100 a *shot* and can be blocked by second-hand sports gear or hardware store respirators. And the thing is, most of these weapons work primarily on fear. Chemical weapons, batons, flash-bangs... it's all just to get us to run away and to not challenge the police.

This information is presented so that we may better educate ourselves about what we can expect on the streets. The focus is on the United States, but of course these weapons are available throughout the world. Every government has its own style of repression: some play good cop, some play bad cop, some will let protestors get away with a *lot* and then just might kill or disappear some of them. In the USA, it's condescending authority: circumstance be damned, law & order are in charge. But the cops here are at least marginally accountable. They kill *individuals* all the time, but they're not likely to start killing protestors anytime soon; there are too many of us and they know they'd never hear the end of it. Thus, an endless variety of weapons aimed to incapacitate and control:

SHIELDS

Shields are very conspicuous, and they kind of scream "target me for arrest!", but they are also incredibly useful. The police use riot shields made of shatterproof plastic, which are nice if you can get them. Wooden shields are remarkably heavy but can be made quite simply. For any shield, you want to attach a loop and a handle: your arm goes through the loop and holds onto the handle, giving you two points of contact with the shield.

Lightweight shields can be cut from traffic barrels or those blue plastic 50gallon drums. I suppose a pretty badass but kind of heavy shield could be made from a metal 50gallon drum as well.

Large groups with shields (and/or reinforced banners) are incredibly useful for street tactics as well, but that is beyond the scope of this zine.

Protection from ADS

There isn't much information available about defense from ADS weapons, but what info there is is quite promising. Apparently, electromagnetic radiation cannot penetrate conductors; this is why there is a mesh shield on the front of your microwave. The heavier weight of ThorShield, that anti-taser fabric, claims to be effective against ADS. Unfortunately, the mesh of a conductive fabric will apparently need to be very tight in order to protect from the 95ghz beam. Tinfoil might work well. Other sources claim that the conductive fabric would need to be grounded into something, which makes resisting it much harder, but that isn't verified information.

It's been suggested that basically, a shiny shield like an old-school trashcan lid might work.

And finally, we're talking about a single raybeam being fired from a gigantic dish on top of a humvee, one that is intended to keep people moving. So... move!

GOGGLES

You're going to want goggles that don't use little foam bits to seal to your face; find the ones with rubber/plastic instead. If your goggles have holes for ventilation, close them up with epoxy (better) or tape (easier). This means your goggles are going to fog up a lot. Sorry. Goggles are pretty essential protest gear if you don't have a gasmask. Possibly even if you *do* have a gasmask, because you can wear the goggles up on your forehead and put them into place pretty instantly.

Protection from Impact Weapons

ARMOR

Making armor is fun and rewarding. A countless number of methods have been utilized throughout the years, but one solid principle for protection from impact weapons remains: the shell-soft method.

Basically, you want a hard outer shell (metal, plastic, whatever) on top of a soft inner layer (foam, layered street cone plastic, quilted cloth, layered leather, etc.). The hard outer layer spreads the kinetic energy of the blow (whether by riot gun or baton) across a wider area, which is then more easily absorbed by the softer layer below. When there is a line of cops and a line of protestors, the cops will have limited targets (particularly when they are wielding riot shields) and will most often use overhead blows, aiming for the head, collar and shoulders. In a more dispersed situation, it seems likely they'll go for their usual targets (chart on page 28). Projectile weapons are *supposed* to be aimed below the breast line, but of course people get shot in the face occasionally as well. They like to target knees with baton rounds.

It's easiest to get sports gear from goodwill and similar places. Making an effective piece of leg armor is kind of annoying. Don't forget to guard your kidneys (the sides of your lower chest), as they are very jab-able. Motocross armor is pretty amazing stuff, light and fairly low-profile under other clothing (although it's pretty easy to end up looking like a football player with armor under your clothes).

For goodness sake don't forget a helmet. Even a bike helmet will help from overhead blows, but you might want to consider an old-fashioned cannonball-looking motorcycle helmet, as they cover the back and sides of your head as well. Make sure you can still put on your chemical weapon gear under it though.

And yes, all this protection is hot, but I can tell you that being too hot will be the last thing on your mind unless you're out for hours and hours with huge breaks in the action.

ELECTRICAL

Electric weapons (TASERs and the like) are the new big thing in less-lethal law enforcement. In fact, they're so "less-lethal" that someone in the US dies of being tased by a cop about once a week. Recent reports indicate that one in three tased persons requires medical assistance.

Of course, TASER International and the police refuse to acknowledge that stun guns kill people. Instead, they point to a fictional disorder that they call "excited delirium", a state caused in some people by arrest with symptoms like writhing around on the ground, heart problems, disorientation, and death. The scientists have reached no consensus, but near as I can tell, the deal is that many people have a predisposition to heart arrhythmia and may not know it, and these people are more likely to be killed as a result of being shocked by stun guns.

Stun Guns

Stun guns are less-lethal weapons that use electricity to hurt or incapacitate their victims. They're usually called "Tasers", although Taser is actually a brand name used by TASER International. There are two primary brands of stun gun used by law enforcement: TASER and Stinger (TASER is an acronym for Thomas A. Swift's Electric Rifle, taken from a sci-fi story). Both work in a similar way, having two modes: projectile and "drive stun". The projectile method works by shooting darts (2 for TASER, 2 or 4 for Stinger) into the target that are attached by insulated wires to the base unit.

In projectile mode, both use Electro-Muscular Disruption (EMD) technology to cause Neuromuscular Incapacitation (NMI) in their targets. After a half-second, the pain is nearly unbearable and causes muscle contractions. After 2-3 seconds, the subject is dazed and dropped to the ground. More than 3 seconds completely disorients a person and causes them to stay on the ground, risking breathing impairment and heart damage.

In "drive stun" mode, the stun gun runs electricity between two points in the gun itself and becomes, essentially, a cattle prod. This can cause burning, intense pain, and scarring, but is a pain-compliance weapon (as compared to the projectile mode, which will take anyone down, regardless of their pain tolerance).

Most stun guns come with laser sights.

You cannot easily pass along the charge by touching someone while being tased, despite urban legend, since the charge moves between through the body between the probes, rather than through the body into the ground as is the case in most cases of electrical shock.

The British have conducted studies and determined that stun guns can sometimes ignite CS gas (teargas, see page 13), meaning protestors would catch fire. The UN has classified the use of stun guns as amounting to torture.

TASER

TASER is the leading brand of stun gun, at least in the United States. Each cartridge (which costs between $50-100) can only be used once before being discarded. There are two primary models available to law enforcement and military personal: the X26 and the Advanced M26. The X26 is the more common and more advanced of the two and was released in 2003. Cartridges, interchangeable between the two models, come in ranges between 15' and 35'. The company claims that the X26 darts can penetrate 2" of clothing—although each barb is only .375" to .525"—by using fancy "shaped pulses" of electricity that, unlike older models, don't actually need to get all the way into your skin to effectively disable you. These TASERs have been found effective against type IIIa body armor (the most common bulletproof vests).



the TASER X26 in the hand of a St. Paul police officer

Avoid putting oil on your skin, like oil-based sunscreen or any other body oil. This can exasperate the pain of chemical weapons.

A rain jacket or other water -proof or -resistant material will do you good, because chemicals can otherwise soak into your clothing and continue to irritate you long after your exposure.

Wear a mask around your neck/face and goggles on your forehead and you can get protected pretty quick. Usually the police will brandish their weapons a bit (either to cause fear or to announce their machismo, it's unclear which) before firing, but not always. If you see the cops putting on gasmasks though, it's a safe bet you should do the same.

RESPIRATORS

Respirators come in "air-purifying" models, which filter existing air (and are what you want) and "atmosphere-supplying" models that have their own gas tanks that aren't necessary for protests (unless you are protesting on Mercury or something, of course!). There are full-face respirators (usually these are what are called gasmasks) and half-face respirators. Gasmasks are more convenient since you won't need goggles as well, but be sure to get one with shatter-proof lenses. Some models provide better visibility than others as well, and visibility is crucial in militant protest situations. Full-face gasmasks often accommodate glasses as well, which is important since you won't be wearing your contacts.

A gasmask is only as useful as its cartridges, and there are dozens of types, each made to filter different chemicals. You want one, like the CP3N cartridge by 3M, that is designed for riot protection. It looks like most military gasmasks come with filters designed to protect from chemical weapons, and are often found at pretty cheap surplus prices. Beware, however, that cartridges more than 10 years old might be expired and are potentially toxic.

MASKS

"Disposable Particulate Respirators", aka dust masks, are not effective protection against chemical weapons; they are intended for large airborne particles and not for gasses. That said, they're probably better than nothing. The same goes for bandannas. A bandanna, soaked in vinegar (with apple-cider being the preferred aroma), will give you a few minutes respite from teargas. If you don't have a gasmask, keep a bandanna soaked in vinegar in a ziploc bag in your back pocket or something. After you've been sprayed or gassed, you're going to want to change bandannas (and ideally, clothes) as soon as possible anyhow.

sistant and non-conductive. Heat-treated nylon or cotton is suggested in the patent application. The point of this layer, near as we can tell, is to keep your clothes from catching on fire. It's possible that the material which tents are made out of would work, as well as children's pajama pants, as both are treated for heat.

Note that we have *not* tested these theories as of yet, and would *love* any further information. One DIY solution, probably the cheapest, would be copper mesh sandwiched between two layers of leather. Hopefully the two layers of leather will provide enough stopping power. The pricey but more concealable solution would be Kevlar, conductive fabric, and then a layer of heat-blanket style fabric such as "pyroguard".

It has been suggested that this armor need only protect the torso (front and back). Cops are supposed to shoot the Taser so that one prong goes into your torso and one goes into your arm, but one person we asked opined that if one of the prongs is stopped then the circuit cannot complete.

The biggest loophole in this armor is the cop themself. Cops seem to use stun guns in two different situations: on unruly—but non-shootable—people, and as an alternative to lethal force. If you get shot with a stun gun and you don't go down, it's quite likely the cop will turn to live ammunition. Of course, you could always drop to the ground and act as if stunned, for whatever purpose. In protests, cops are usually using stun guns as just another less-lethal weapon and are unlikely to resort to live ammunition.

Layer	Purpose	Properties Needed	Suggested Materials
Inner	prevent penetration	tough, heat-resistant, non-conductive	leather, Kevlar 29, hard plastic
Center	complete circuit	**conductive, non-heating**	non-soldered copper mesh, FlecTron
Outer	keep clothes from burning	heat-resistant, non-conductive	leather, Kevlar 29/49/149, Pyroblanket, some nylons / cottons

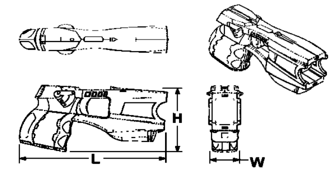
the theoretical composition of a stun gun resistant jacket

Protection from Chemical Weapons

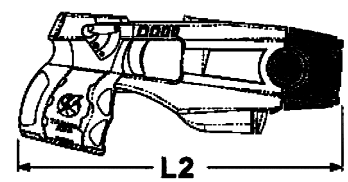
Do *not* wear contacts. Chemical weapons irritate the eyes and wearing contacts will greatly aggravate the problem. If you are wearing contacts when you get gassed, getting them out is your first (painful) priority.

various technical specifications of the TASER X26

Dimensions (Without Cartridge)			
Length (L)	Height (H)	Width (W)	Weight
6.00″ [15.24 cm]	3.20″ [8.13 cm]	1.300″ [3.30 cm]	7.20 oz [204.12 g]



Dimensions (With Cartridge)
Length (L2)
7.250″ [18.52 cm]



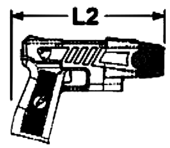
1. Output characteristics[3,8]:
   Wave form: Complex shaped pulse
   Pulse rate: 19 pulses per second (PPS)
   Pulse duration: 100 microseconds
   The trigger activates a 5-second cycle. The cycle can be stopped by placing the safety lever in the safe position.
   Peak open circuit arcing voltage: 50,000 V
   Peak loaded voltage: 1,200 V, avg. voltage over duration of main phase 400 V, avg. over full phase 350 V, avg. over one second 0.76 V.
   Current: 2.1 mA average
   Energy per pulse:
   Nominal at main capacitors: 0.36 joules
   Delivered into load: 0.07 joules
   Power rating:
   Nominal at main capacitors: 6.84 watts
   Delivered into load: 1.33 watts
2. Power source: Digital Power Magazine (DPM)[4,8] a battery of two 3-volt cells, or Extended Digital Power Magazine (XDPM)[4,8]
3. Temperature range: -4 °F [-20°C] to 122 °F [50 °C]
4. Relative humidity: 15% to 80%
5. Housing: High impact polymer
6. Patent: U.S. D508,277, D504,489, and other patents pending

various technical specifications of the TASER Advanced M26

Dimensions (Without Cartridge)			
Length (L)	Height (H)	Width (W)	Weight
7.13″ [18.11 cm]	6.00″ [15.24 cm]	1.75″ [4.44 cm]	19.2 oz [544.31 g]



Dimensions (With Cartridge)
Length (L2)
8.30″ [21.10 cm]



1. Output characteristics[9]:
   Wave form: Damped oscillation /"blunt" pulse with 17 μs decay time constant.
   Pulse rate:
   20 PPS ± 25% with NiMH rechargeable cells
   15 PPS ± 25% with alkaline cells
   Pulse duration: 40 microseconds full waveform 10 microseconds primary phase
   The trigger activates a 5-second cycle. The cycle can be stopped by placing the safety lever in the safe position.
   Peak open circuit arcing voltage: 50,000 V
   Peak loaded voltage: 5,000 V, avg. voltage over duration of main phase 3400 V, avg. over full phase 320 V, avg. over one second 1.3 V.
   Current: 3.6 mA average
   Energy per pulse:
   Nominal at main capacitor: 1.76 joules
   Delivered into load: 0.50 joules
   Power rating:
   Nominal at main capacitor: 26 watts at 15 PPS
   Nominal delivered into load: 7.39 watts at 15 PPS
2. Power source: 8AA NiMH[7] or alkaline cells
3. Temperature range:
   NiMH cells: -4 °F [-20 °C] to 122 °F [50 °C]
   Alkaline cells: 32 °F [0 °C] to 122 °F [50 °C]
4. Relative humidity: 15% to 80%
5. Housing: High impact polymer
6. Patent: U.S. 6,636,412 and other patents pending

PROTECTION

Protection from Electrical Weapons

For every attack, a defense. Since stun guns have found their way into common usage, people have discussed how to successfully defend oneself from them. The answer isn't quite as complicated as it might seem. The basic premise is: you allow the electric prongs to complete their circuit before the electricity goes into your skin.

With the newer TASERs, at least, you can't just allow the prongs to not penetrate into your skin because of their "shaped pulses" that somehow shock you through clothing. Further, it's been suggested that you can't *just* complete the prongs circuit, because if the prongs are in you, you'll get shocked and/or burned.

While we've found no information on DIY methods being tested, we did run across the commercial product announced early in 2008, a fabric called ThorShield, manufactured by G2 Consulting and distributed by Point Blank Solutions Inc. It is only available to law enforcement, military, and manufacturers of products for those two categories. But their patent #7284280 is online.

The idea is to have three layers of fabric. The first layer, closest to the skin, needs to be tough enough to repel the prongs, nonconductive, and heat-resistant. Heat-resistant because one of the biggest dangers of this armor is electrical burns caused by the conductive fabric. Kevlar and other ballistic fabrics are the most likely candidate, although they aren't cheap. Kevlar, the least expensive, will run around $32 for two square yards. Note that Kevlar comes in three grades: 149, the weakest, 49, used for structural elements, and 29. 29 is the ballistic stuff, which you'll most likely want. Leather might be a candidate as well, perhaps backed by thin rubber (like biketube). Multiple layers of any of these would be a good idea.

The middle layer is the active layer and it needs to be conductive, ideally with a material that doesn't emit much heat while conducting. Copper has been suggested as ideal for this, and is available in non-soldered mesh. There are also conductive fabrics like FlecTron, which come with copper thread woven through, costing about $60 for two square yards.

Then there's the third, outer layer. This needs to be heat re-

orrhages and strokes. Prototypes have been made, and testing is expected to go until 2010 before they are released. They are being marketed specifically for border guards to stop illegal crossers from Mexico.

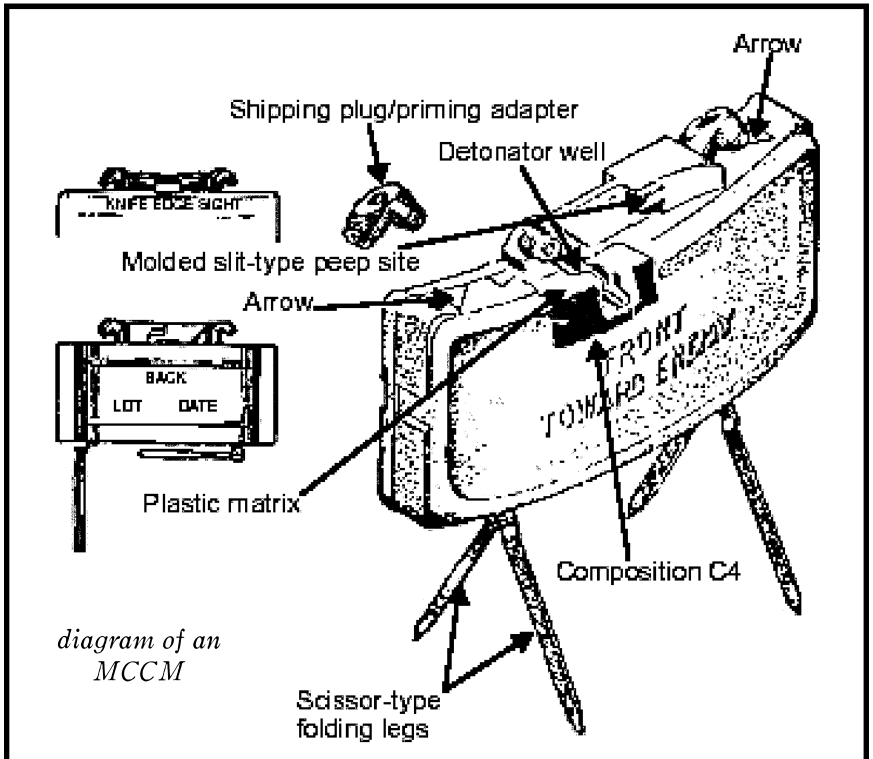


diagram of an MCCM

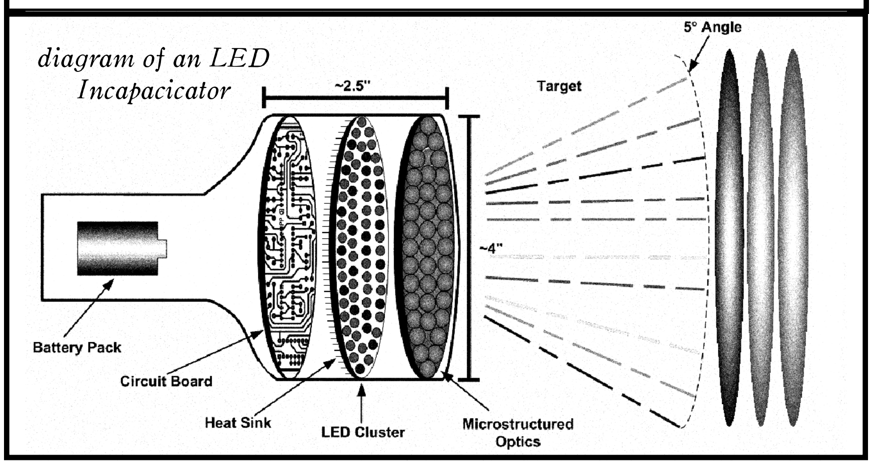


diagram of an LED Incapacicator

The darts are fired with compressed nitrogen charges (at a force about equal to a paintball gun) and are barbed to prevent easy removal. Supposedly, about 30% of the police in the USA are armed with TASERs. The St. Paul police are all armed with X26's, while the model used by the Denver police is unknown but assumed to be X26's as well.

The X26 comes in either bright yellow, clear, or black. The Advanced M26 (much larger), comes in yellow and black.

TASER cartridges are not supposed to be carried in one's pocket, as they can be set off by electrostatic discharge (unlikely to be significant threat, since the power source is in the gun itself, but nice to know). They have a shelf life of 5 years.

The Advanced M26 and the X26 both default to 5-second charges, which can be shortened by switching the safety on or prolonged by holding the trigger longer. The X26 is charged by one of two types of lithium power packs, while the Advanced M26 is powered by 8 AAs. Their operating temperatures are -4 to 122°F, relative humidity 15%-80%, except when normal batteries are used, in which case it's not as useful below freezing. The X26 comes with an LED flashlight built in, and both models have a 650nm laser for sighting.

The X26 comes with a USB interface to download firing data that is automatically stored. An additional TASER CAM can be purchased to fit into the bottom of the grip that automatically records (with night-vision) everything from the time the safety is turned off. The X26 weights 7.2 ounces, the Advanced M26 is 19.2 ounces.

Both offer "drive stun" mode.

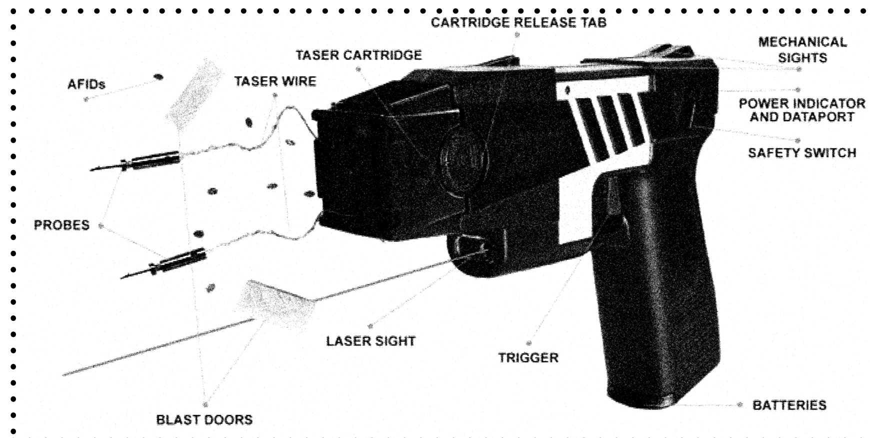
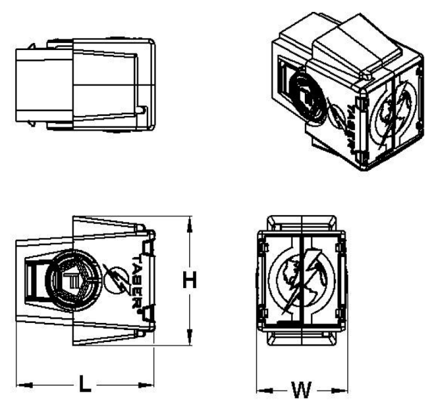
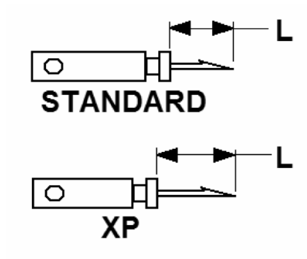


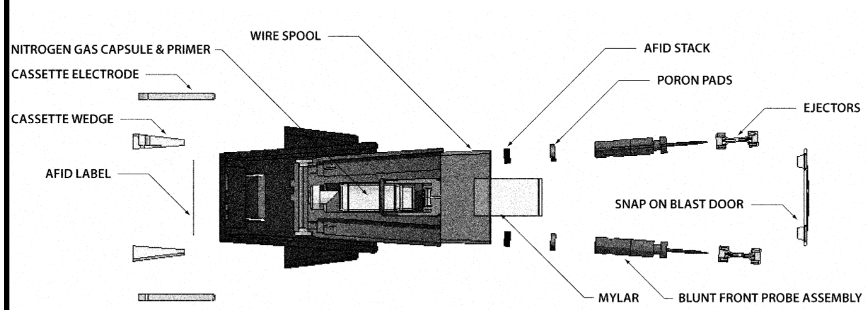
diagram of the TASER Advanced M26

Cartridge			
Length (L)	Height (H)	Width (W)	Weight
2.125” [5.40 cm]	1.890” [4.80 cm]	1.400” [3.57 cm]	2.4 oz [68.04 g]

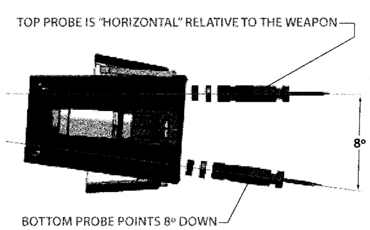


Probe	
Length of probe point (L)	
Standard	0.375” [9.53 mm]
XP	0.525” [13.33 mm]





CARTRIDGE CUTAWAY



15’ CARTRIDGE

1. Shelf life: 5 years
2. Housing: High impact black polymer
3. Patent: U.S. 5,078,117

various technical specifications of the TASER cartridge (used by all models but the civilian’s C2)

Vortex Ring Gun

In 2006 they began to develop the vortex ring gun, the science of which seems to be above my head, but basically it shoots a ring of high-pressure air (a vortex ring) that can knock you over at, so far, 10 meters with a single shot. They are also experimenting with having it fire at specific rates so as to cause resonance in your body to fuck your shit up even more. It will be fired with an adaptor for a 40mm grenade launcher, most likely.

Malodorant

Stink bombs have been used in warfare since at least WWII and the US government is currently researching their use for riot control, but I’ve found no evidence of their use. For the most part, they are banned in the way that most chemical weapons are banned.

Netgun

There are netguns in the world that shoot nets. You get entangled in the net. They’ve been rumored to be in use by the cops but I have no proof of the matter. The one I could find the most information on was the NET-2000 Shooting Net Rod that looks a hell of a lot like a big old clanky flashlight. It shoots out a 52sq. ft. nylon net with compressed air, with an effective range of about 50’.

Electrical and sticky nets are under development for military and law enforcement use, but little information is available.

Modular Crowd Control Munition (MCCM)

What the world needed, the government realized, was a less-lethal version of the claymore mine. So they made this thing, which so far is only in military hands. Basically, it shoots out 600 rubber balls, 60 degrees of coverage with an effective range of 5-30 meters. (picture on next page.)

LED Incapacitator

Intelligent Optical Systems is designing these multi-color flashlights that work by flashing colors so fast that it makes your head spin. In fact, it makes you throw up. It’s been dubbed the “puke saber” by some and the “sick light” by others. They have a built in rangefinder that detects the nearest set of eyeballs and determines frequency. Critical scientists claim it could lead to hem-

protestors. If they come into use, the thing to do is study the brand and type that is being used and then wear lenses that block out that specific wavelength (ask a tech theatre kid, they'll explain it to you). Of course, some go across multiple wavelengths. But hopefully, we'll never have to deal with it, yeah?

They're working on a variety called the "veiling-glare laser" that operates in the UV spectrum, that will cause your vision to go white but won't permanently damage you (and, being invisible, will be hard to find the source of). However, it is likely that it will never be successfully developed.

Pulsed Energy Projectile (PEP)

Furthering our foray into what we hope will remain science fiction (but won't), the military is developing a flash-bang infrared laser: this thing plasmifies the first thing it touches, which in this case will be the top of your skin or perhaps your clothing, resulting in a loud bang and a shockwave that will knock you over. Lethal varieties have been crafted as well. They have working prototypes, but currently they weight around 500lbs. and need further refinement. It will be vehicle mounted and has a range of about 2km.

an excerpt from the contract awarded to the University of Florida by the US Navy.

M67854-04-C-5074
Attachment 1
Statement of Work

1. Technical

A) Objectives/Tasks/Concept. Recent advances in directed energy weapons technology suggests that scalable, non-lethal to lethal force systems may be possible. Such a system would be useful in many environments. Two systems currently under development, active denial and pulsed energy (ADS and PEP) offer mainly complementary capacities that could address multiple tasks [redacted] These tasks include the [redacted] The full capability of these directed energy systems (DE) are still being explored. At their current stage of development, each system has clear non-lethal (ADS) and lethal (PEP) capacities suitable to the above tasks. Our experiments will examine the feasibility of PEP as a new generation non-lethal weapon. Pulsed energy can be configured to produce plasmas of exceptionally high energy. [redacted] In the studies described below we will determine the feasibility of using the plasma derived EMP to induce pain suitable to disarm and deter individuals or form barriers to the movement of large hostile groups. If successfully deployed, PEP could complement ADS in situations in which the latter is ineffective, less effective, or prone to countermeasures. Many of the countermeasures that might be envisioned against ADS [redacted] offer opportunities for PEP targeting (via plasma induction or ablation of the defense). Despite these potential advantages, certain special capabilities and features of ADS offer advantages over PEP in many scenarios. Therefore, the systems are complementary.

When a TASER weapon is fired, the cartridge releases at least 24 pieces of bright confetti with the serial number of the cartridge. These are called AFID (Anti-Felon Identification Tags). These might be useful for protestors to collect for police accountability reasons.

There are TASERs available to the general public as well: the X26C and the C2 (both of which offer a maximum range of 15'. The X27C is a souped-down version of the X26. It is less powerful, defaults to a 10-second charge, and doesn't store usage information. The C2 is the hip, "iTaze" sort of model that comes in pink and leopard-print among other colors. It uses its own type of cartridges which are slightly cheaper ($25 a shot) and it defaults to a 30-second(!) charge.

On 5/5/08, TASER International announced the development of the Controlled Digital Power Magazine, which will be a system that prevents a TASER, having been taken from an officer, to be used until a 5-digit code is entered. Basically, there will be a lanyard that, if pulled free, will disable the device. This is being developed for prison guards, primarily, but might provide a method of disabling a TASER. It is expected in the third quarter of 2008.

STINGER

Since TASER is the industry standard, the Stinger model mostly compares itself to the TASER. All of their models have been under the name S-200, so it is difficult to assess changes from older models. While the concept is the same, there are a few differences between the Stinger S-200 and the TASER X26:

Infrared docking, rather than USB, is used to transmit information to a computer. It uses off-the-shelf lithium batteries. It has a supposedly faster reloading time thanks to automatic car-

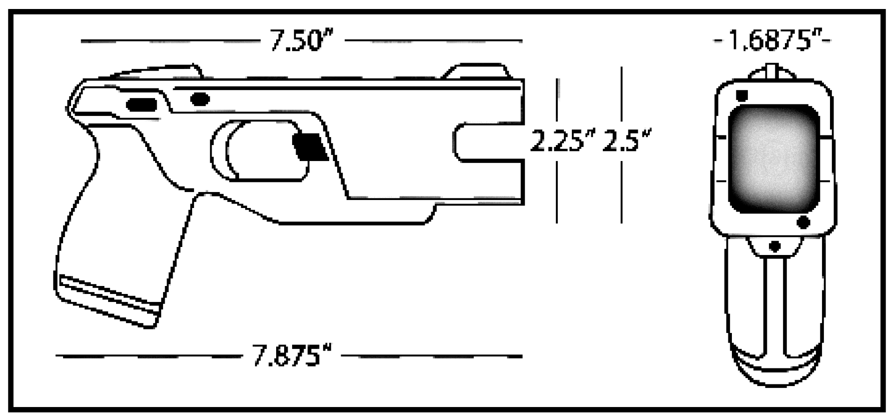


diagram of the TASER Advanced M26

various technical specifications of the Stinger S-200



PULSE RATE - Approximately 19 pulse groups per second
PULSE DURATION - Approximately 200us
PEAK ARC - ~VOLTS 56KV
PEAK LOADED VOLTAGE - ~1100V
DC CURR AVG - ~2.1.0mA
ENERGY AT MAIN CAPACITOR 0.60 J

tridge ejection, a 635nm laser sight, and three firing modes (hold the trigger to keep shocking, 2 seconds, or 4 seconds). Stinger also claims their model, using "pulse groups", is less likely to cause serious harm to the victim and is more likely to incapacitate. There is also a less common 4-dart system available that is more likely to connect than the 2-dart models. While range information is conflicting, the official website claims that cartridges have a range of 22'. Weighs 13oz. Works in 23 to 113 degrees, humidity 10-95%. A camera attachment is under development.



an LRAD in NYC

emit a loud (120db in normal use, up to 151db to those nearby when safeties are overridden) high-pitched screech that disorients and upsets and hurts the listener. Anyone too close to one of these can certainly have their hearing permanently impaired. The beam goes out covering about a 30 degree angle. Can be counteracted, to a certain degree, with earplugs. These were used by the NYPD during the 2004 RNC.

Interestingly, a hand-held, short range sound gun, called the Sonic Devestator (spelled like that, yes), was available for consumer purchase from futurehorizons.net. They are now sold out and sell the plans to build your own for $30.

MEDUSA

Update: This weapon is no longer considered viable. Basically, there was talk of using a microwave auditory effect to beam sound into someone's head without creating a noise audible to the outside world. But experts analyzing the idea have reported that the levels of microwave energy required would be lethal long before it would be loud enough to be a nuisance.

Dazzler

The only laser guns in production are meant to blind people and they are banned by international law. Of course, the US uses them in Iraq. They operate by shooting lasers of specific or varying frequencies into the target's face, blinding them. Some companies say that theirs don't cause permanent retinal damage and are therefore legal in warfare. Some of these things have ranges of up to 10km, but most are closer to 2-4km. Some are made to either mount on top of M-16 rifles or to take place of a grenade in a grenade launcher (not that they are shot... they just sit in the barrel). I have no knowledge of them being used on

Water Cannon

Water cannon have fallen out of vogue with police in the USA, primarily due to the negative media attention they received in the civil rights era. They are still in use in other parts of the world, however. The modern riot-control water cannon has about a 2000-gallon tank and delivers around 250 gallons of water a minute. The force is enough to knock a person over and they have been known to cause internal injuries. Modern water cannon trucks are controlled from within the cab with a joystick so that the operator is not exposed.

English and Indonesian police have, in the past, added dye to the water to identify protestors, but this isn't common practice.

Electrified Water Cannon

Abandoned by Jaycor Tactical Systems before it was fully developed, the electrified water cannon was closer to a super-soaker taser than to a fire truck taser. Basically the idea was to provide a continuous stream of saline water to the target, through which electricity would be run as a sort of wireless stun gun. It was tested with a tested range of 6 meters although they believed they would eventually obtain 30 meters.

As a curious note, Jaycor Tactical Systems is employee-owned. They've dropped the electric water gun thing to work on something quite similar to TASER's XREP.

Sticky Foam

Another riot control measure that never really entered mainstream use, sticky foam was exactly what the name suggests. It shot out and stuck to you and stuck you to yourself and to the ground and all of that. It was pretty problematic, as was discovered when "peacekeepers" used the crap in Somalia. If it got over the mouth and nose, it was lethal. It was hell to get off, requiring the use of toxic solvents. And finally, it clogged up its own gun right quick. Nowadays, there are some nuclear stockpiles somewhere that are booby-trapped with sticky foam, but you probably won't run into it at a protest.

Long Range Acoustic Device (LRAD)

LRAD, designed by American Technology Corporation, can shoot loud, directed sound out to about 300 meters. Supposedly, they are intended for conveying messages and such, but of course they are now anti-demonstrator devices. Essentially, they

Stun Shield

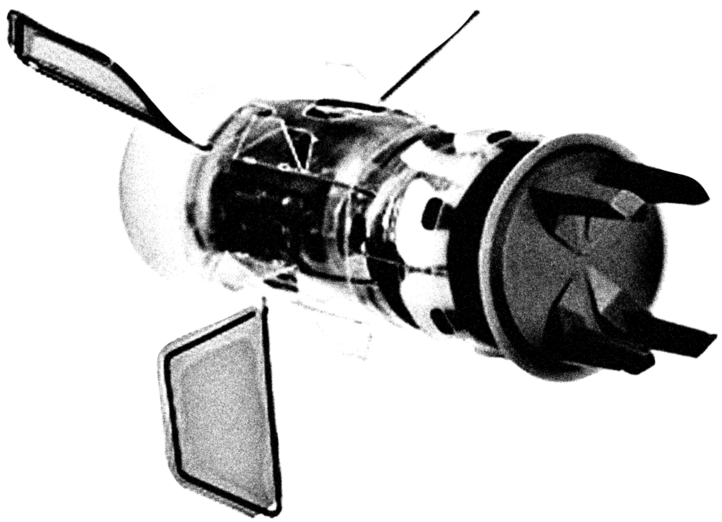
Stinger Systems makes a device called "The Ice Shield", an electrically charged riot shield. They come both concave and convex, angled towards or away from the bearer. They are wielded with two handles, with the activation switch in the aluminum handles. They are in use in many prisons and were seen in use at the Miami FTAA demonstrations in 2003, although they may have become less common since a malfunctioning one allegedly killed a prison guard. They are made of 1/4" Lexan plastic, the same stuff that your Nalgene bottle is made of. There are 9 "sparking points" on the front that spark to create a visible deterrent. They are powered by 6 3-volt lithium batteries and have a 30-minute running time per charge. They come in 20x36" and 24x48" sizes, with the handles 14" and 16" apart in each size respectively. They run at 40,000 - 50,000 volts / 4-6 amps and cost $575-$595. It is unclear if they operate on a purely pain-compliance principle or if they will actually lock up the victims muscular system.

It seems feasible that these could be fairly easily shorted in a riot situation by using an insulated glove to place metal between the contacts on the shield (which are clearly visible). Discretion is advised.



TASER XREP (under development)

Later in 2008, after they finish testing, the military and police are going to get their hands on these little bastards. They are basically wireless TASER darts that are fired out of a 12ga shotgun. It has the same NMI as a handheld TASER. As soon as the shot leaves the shell, a ripcord activates it and it has 20 seconds of life. Its velocity is 260' per second and it is intended to be used at ranges of up to 65'. It has 3 fins that deploy as fletching after firing and 4 prongs that stick into you on impact. After impact, part of the body of the thing falls away, still attached by a cord, and 6 more electric barbs spread the shock out further on your body. If you grab at the projectile while it's in you, the "reflex engagement electrodes" will send the electricity through your hand and arm as well, making it all that much the worse for you. It even has a damn computer in it to make decisions about how to spread out the shock between all of its nasty points to make your life as crappy as possible.



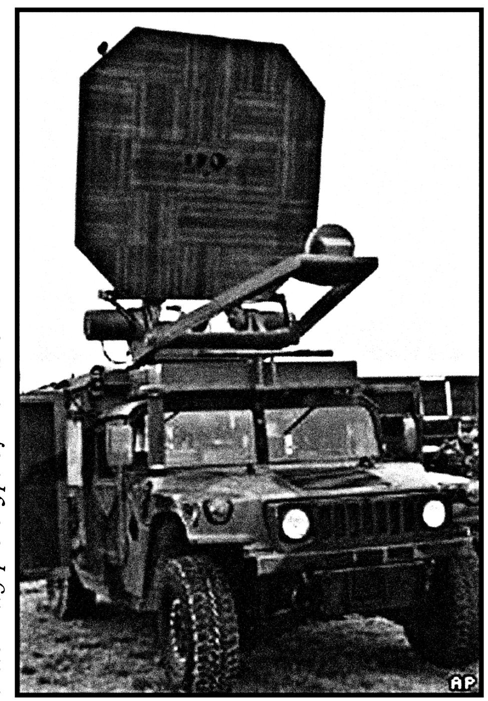
OTHER

Active Denial System (ADS) (Pain Ray)

The ADS is a dish mounted to the top of a humvee that shoots out a focused, invisible ray of 95ghz millimeter waves (microwaves) that penetrates the first 1/64" of your skin and causes unbearable pain within two seconds by heating the surface of your skin to around 130°F. The military claims that it takes about 250 seconds before it would actually burn the surface of your skin. The effective range is around 500 yards.

These should see deployment in the near future, but not as soon as the public was originally led to believe. They are continously "six months" from deployment in Iraq.

What's interesting about these things is the discrepancy between their stated purpose and what they would be most effective as. While Raytheon is ostensibly manufacturing them for military purposes, they are actually much more applicable for use against unarmed demonstrators; their range is about half of the range of small arms, and they are large, obvious, line-of-sight weapons with a very narrow range of fire. It wouldn't be hard for an armed group to overwhelm one. However, they are perfectly suited for use in crowd control, in instigating crowds to run, etc.



a working prototype of the ADS

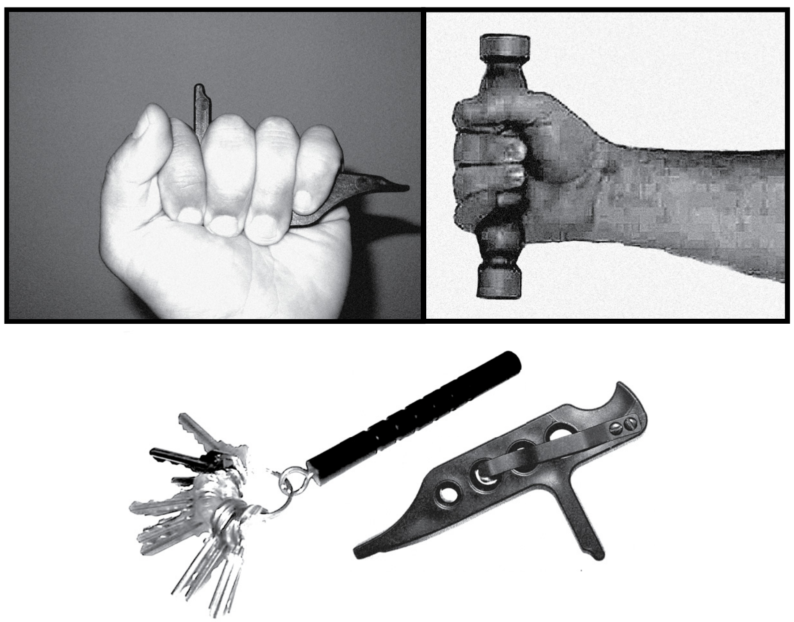
So basically, they are making these so that we become scared of them. However, there are some remarkably promising options for defending oneself from these things (page 43).

Close-quarter Weapons

There are a few fist weapons that police occasionally carry. Back in the day they used yawara sticks, which were basically thick pieces of wood, plastic or metal, about the size and shape of a tagging marker. These protruded slightly from the fist. Nowadays a slightly thinner variety, the kubotan, is more common. Another model of a similar concept is the plastic Talon, which has a clip and is worn on the collar. All of these are used to deliver pain compliance holds on resisting subjects.

Orcutt Police Nunchaku (OPN III)

Apparently, about 200 police departments in the USA (including the Corrections Dept. of Denver) use the OPN against unarmed, resistant subjects. It's basically a nunchaku that is used for holds and control rather than for impact. All of the parts are made to have some give, and the handles actually bend a bit to avoid breaking bones.



clockwise from upper-left: Talon in hand, yawara stick in hand, Talon, kubotan. Not to scale.

CHEMICAL

Teargas is perhaps the iconic riot control agent, but it's possible that the heyday of continuous burn grenades is over. Police, at least in the USA, are less likely to resort to clouds of teargas when directed sprays of pepperspray and other chemicals will suffice. Huge clouds of teargas have the tendency to affect bystanders and get into the ventilation systems of nearby buildings. What's more, if used improperly teargas can blind the crowd and prevent it from dispersing. Supposedly, hot gas (pyrotechnically dispersed gas) is considered a sort of last resort in riot control. Pepperspray, on the other hand, they just *love*, at least here in Portland. They love it so much that they douse everybody who moves and everybody who doesn't move. Teargas may be used more rarely, but chemical weapons are a mainstay of the riot control situations.

All of these things covered below are "lachrymatory" agents, which is to say they do their dirty work on the ducts of your eyes.

CS Gas

(2-chlorobenzalmalononitrile - $C_{10}H_5ClN_2$)

Odds are, if a canister starts spewing white gas, it's CS gas. This is by far the most common "teargas" for controlling large crowds. CS gas is actually a solid (and not a gas), suspended in the air and eventually settling to white powder. It reacts with water on the skin and within 20 seconds causes a burning sensation (particularly in the mucus membranes, like the eyes) as well as uncontrollable shutting of the eyes. It can make your throat burn and tears pour out of your ducts, it slows your heart and ups your blood pressure, slows your breathing, and it can cut off circulation to your outer body. In some people it causes dizziness. In some people it causes contact dermatitis, with blisters and crustiness that can last for months (though it usually doesn't). Mostly, the ill effects go away pretty shortly after reaching fresh air, and you're pretty much fine after 20 minutes. It's actually banned in warfare by the 1997 Chemical Weapons Convention, although that is mostly to keep the other side from reacting with more deadly chemical weapons. (This didn't keep Blackwater from deploying it in Iraq a few years ago, but that's a different story).

Recent studies have shown CS gas to mutate chromosomes, cause miscarriages, and mess up your liver and heart. Many protestors have suffered menstrual irregularities as a result as well.

Studies show that drunks, crazies, and the drugged-up are sometimes immune to the effects of CS gas. (You have to be drugged or drunk to the point of not having a sense of touch, so this is not recommended as a defensive tactic).

How bad CS gas will get you is a matter of how it is transmitted and in what density. In sufficient density, apparently even a mask isn't enough to save you, but you will not run into this problem in riot control situations.

The police generally aim to use teargas tactically, by creating barriers and directing the movement of crowds, rather than for dispersal purposes.

CS gas is projected by riot guns (page 17) or by pepperspray-style canisters (page 20).

CN Gas

(chloroacetophenone - C_8H_7ClO)

More toxic but less potent than CS gas, this is the active ingredient in the older "mace" self-defense sprays. (Mace, a brand name, now usually uses pepper spray instead). It, like CS, is also used as a riot control agent, but far less frequently. This is the original "teargas," but has mostly fallen out of favor. Apparently, the lingering smell is that of apple blossoms.

CR Gas

(dibenzoxazepine - $C_{13}H_9NO$)

The nastiest teargas, CR gas is a lachrymatory agent 6-10 times stronger than CS. Normally a solid (melting point 73°c), it is pale yellow and has a slight odor of pepper. In enclosed spaces, it can be lethal (from asphyxiation and swelling of the lungs). Causes temporary blindness and, occasionally, complete incapacitation. In addition to normal teargas crap, CR gas causes severe skin irritation, persists on surfaces for up to around 60 days, and is thought to be carcinogenic. Areas of skin affected by CR gas, even after thorough cleaning, can continue to hurt if exposed to air for 24 hours or longer. Fortunately, the US claims to not use it in protest situations. It saw quite a bit of use in South Africa in the 1980s and, having been developed by the British in the first place, was used on Irish dissidents in the 1970s.



Butt stroke: The butt stroke is delivered from the on-guard position. The right hand is elevated until the baton is almost parallel to the ground. The butt stroke is made by advancing the body rapidly off the right foot. The right arm is snapped straight. The butt end of the baton is driven to the left, striking the opponent's shoulder, chest, or jaw. The left hand is kept even with the left shoulder. The butt stroke may be fatal to the opponent if either the side of the neck or the head is struck. After delivering the butt stroke, the soldier returns to the on-guard position.



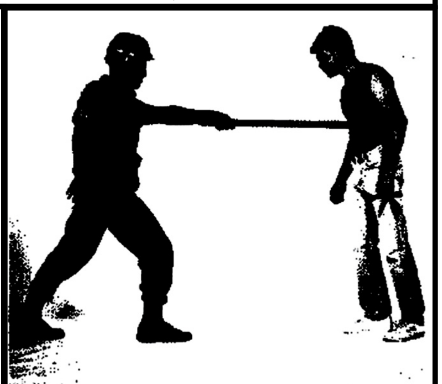
Baton smash: The baton smash can be delivered from the parade-rest, the port, or the on-guard positions. The baton is held horizontal to the ground, approximately chest high. The smash is executed by advancing the left foot rapidly. Both arms are snapped straight, smashing the length of the baton across the opponent's chest. After delivering the smash, the soldier returns to the on-guard position.

from left to right: parade-rest position, port position, then two views of on-guard position. Port and on-guard are both "ready" positions.





SHORT THRUST: The short thrust is made from the on-guard position. The body is thrust forward rapidly by advancing the left foot. The left arm is snapped straight, driving the striking end of the baton into a selected vulnerable point of the opponent's body. The soldier must never direct the thrust directly at the central throat area because it can cause permanent injury or death. The soldier returns to the on-guard position after delivering the short thrust.



LONG THRUST: The long thrust is made from the onguard position. The body is thrust rapidly forward by advancing the right foot. The baton is held in the right hand. The baton is snapped forward, driving the striking end of the weapon into a vulnerable point of the opponent's body. The soldier returns to the on-guard position after delivering the long thrust.

OC: "pepper spray"

(Oleoresin Capsicum)

OC IS A COMPOUND OF CAPSAICIN SUSPENDED IN SOME KIND OF agent, usually propylene glycol. Capsaicin, the active ingredient, is derived from various chili peppers. This solution is then pressurized for use in aerosol sprays.

Pepper spray is an inflammatory and will generally fuck your shit up. If it gets in your eyes, it will burn like hell for 30-45 minutes (untreated) and continue to sting for hours. If it gets into your mouth or nose it will get into your lungs and make breathing painful and hard. If it gets on your skin, your skin will begin to hurt.

While there's no evidence of anyone dying directly from pepper spray, the "difficulty breathing" bit has aided in the death of dozens of arrestees who were further restrained in such a way as to keep them from breathing properly.

Spiciness is measured by Scoville Heat Units (SHU). Jalapeños are around 5,000 SHU, cayenne is about 40,000, Habaneros can reach 350,000. Most pepper spray is 2-5 million.

One company, ZARC International Inc., who claims to have invented the stuff, now produces a "VEXOR" line for law enforcement, which they claim is actually less hazardous but significantly more disabling, with an SHU of 15 million; which is to say it the capsaicin in it is completely pure. Their website has a rather complete section on the history and production of pepper spray, incidentally.

Pepper spray is labeled in the USA with a percentage, usually around 3-10%. This is the concentration of OC to other ingredients, but it is not actually an accurate representation of strength, because the OC itself comes in different strengths.

There's some interesting history with the military doing research and finding that OC was too toxic for use, then the FBI did "research" and found that it was okay... and then the head of that department was found to have taken over $50,000 from an OC company to fake the tests and was fired. As a chemical weapon, it's banned in warfare. Cops love it, of course.

For more about how the stuff is sprayed, see "Sprays" on page 20.

TREATMENT

PEPPER SPRAY IS considered "hydrophobic" and as such, cannot be washed off with water, but can be with a number of other products. Milk has been suggested, even alcohol should work. Not that you want alcohol in your eyes. The "Action Medic Wiki" has the following to say:

Based on our trials, these are our recommendations for exposure to pepper spray, especially for the mucous membranes (eyes, nose, mouth, genitalia).

We recommend an eye flush using a solution of half liquid antacid and half water. This only applies to aluminum hydroxide or magnesium hydroxide based antacids such as Maalox (plain or mint). Please note that we have *not* used simethicone based antacids in the trials so far, and therefore we do not recommend them.

The action-medical community has come to refer to this remedy by the acronym "LAW" (liquid antacid and water), but not all action medical folks use the same protocol we do.

A bottle with a squirt cap is ideal for the eyeflush. Always irrigate from the inside corner of the eye towards the outside, with head tilted back and slightly towards the side being rinsed. It needs to get into the eye to help. You may need to help open the victims' eye for them—they most likely won't be able/willing to open it themselves, and opening will cause a temporary increase in pain, but it does help.

This works great as a mouth rinse too, as long as the victim is alert and able to manage her/his own airway.

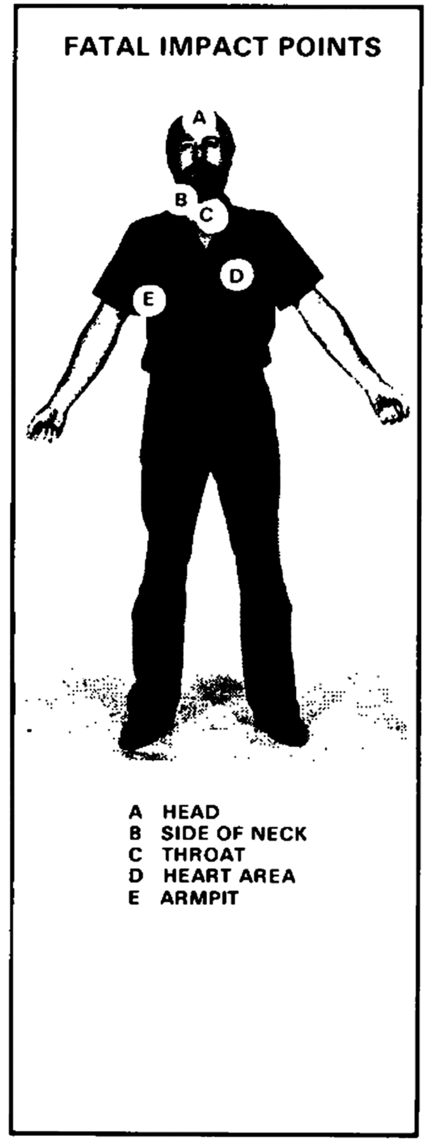
For exposure the skin, they suggest the following (with a heavy disclaimer that this can cause more harm then help if done improperly):

We recommend cleaning the affected area with mineral oil followed immediately by rubbing alcohol. The action medical community refers to this procedure by the acronym "MOFIBA"

It is important to work only on small, manageable areas of the body. If the mineral oil remains on the victim's skin for too long (30 seconds or so) the pain can worsen and burns can begin to form. Do not begin the procedure unless you are sure you have enough time to finish (i.e., the scene is safe).

Wet a 4x4 pad (non-sterile) or similar material with mineral oil. Carefully avoiding the eyes, thoroughly rub a small area of exposed skin with mineral oil. (You can use any vegetable oil in a pinch).

Quickly wet another 4x4 pad with rubbing alcohol, and vigorously rub off the mineral oil. Be extremely careful around the eyes. Fold the gauze as you use it, so that you are always using a non-contaminated part of the gauze.



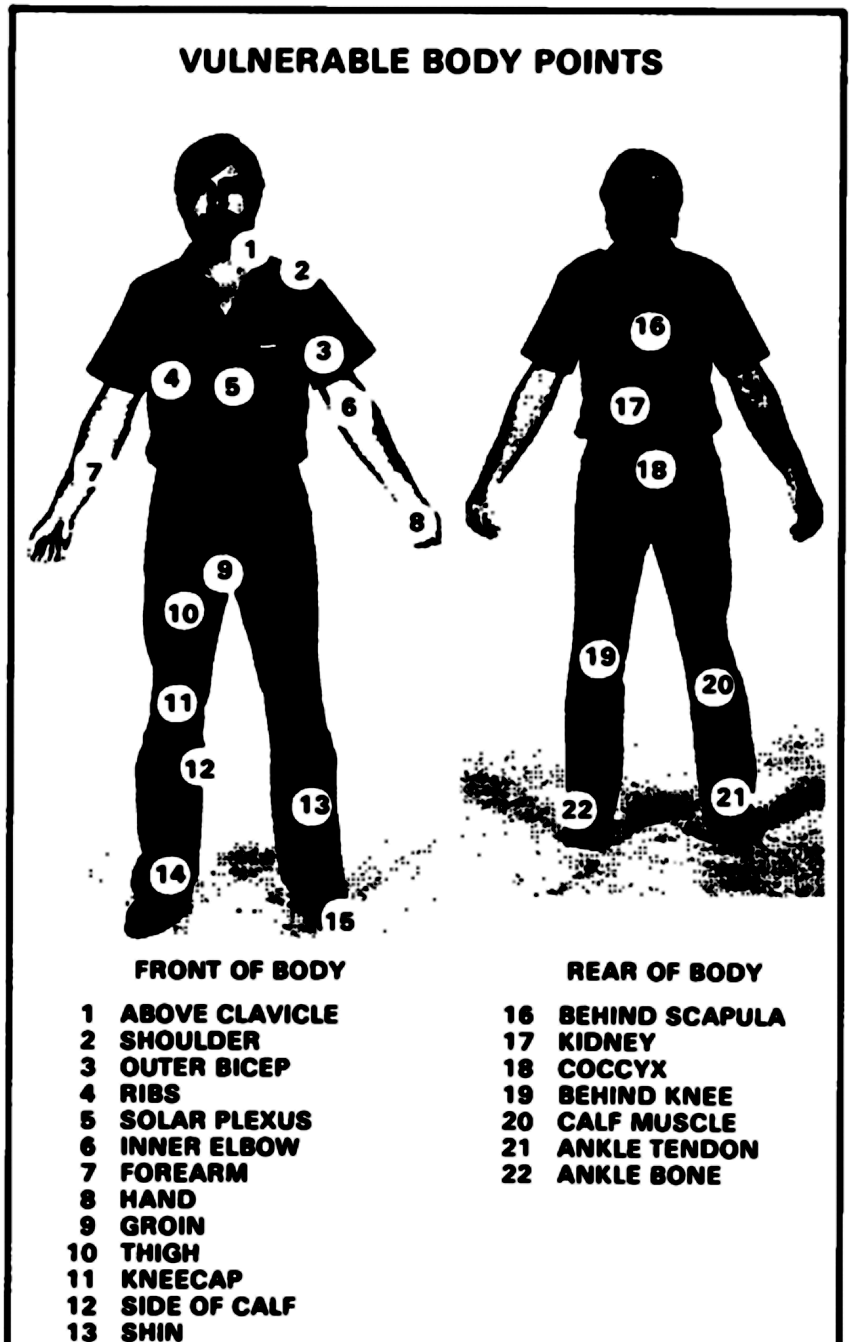
comes in both retractable and non-retractable forms, takes more skill to use successfully as an offensive weapon. But in trained hands, cops can still beat the shit out of someone with one.

Then there are the longer batons, more often used for crowd control. Many of these are 36" or longer, and are usually of plastic or wood. Illustrated are the basic positions, strikes, and targets of these weapons. Some are slightly curved, like katana, for extra whacking speed (the curve allows the weapon to be readied after a strike quicker, since it is more of a blunt slashing weapon).

There's a sort of hybrid baton out there too: the short-sword looking "rapid rotation baton" manufactured by RRB Systems. More common in the rest of the world, the RRB supposedly offers the close range and protective capabilities of the side-handle baton with all the medium range beating power of the straight baton.

They also like to use those gigantic maglights as batons. On their websites, they brag about how using maglights reduces their liability, since wielding one isn't seen as threatening. You can tell a cop is thinking about whacking you based on how they hold it... if the light is sticking out of the top of the hand, where the thumb is, like the way a normal person would hold a flashlight, it isn't readied as a weapon. When they turn it around and have it stick out the bottom of the hand, they are holding it so that they can hit you. They also like to flash the light in your eyes to blind you for a few seconds.

Then there are really weird hybrid batons, like ones with two sideways handles, or ones with pepper spray in the handle, but I've never seen one at a protest.



baton targets

Again, be careful to fully complete this procedure with each victim—mineral oil left on the skin may act to bind any additional pepper spray and cause the victim unnecessary pain.

During cold weather, do your best to keep yourself and the victim dry.

PAVA

(pelargonic acid vanillylamide [desmethyldihydrocapsaicin])

PAVA is a synthetic pepper spray also derived from capsicum. The police in England apparently use it instead of OC, and the company PepperBall uses it in their pepperballs. It's supposedly even more badass and hot and whatnot than OC.

LAUNCHERS

Less-lethal weapons are dispersed by gun, spray, and grenade. Grenades are covered in the "projectiles" section, the guns and sprays are below.

Riot Guns

There are a few types of riot gun. There are 37mm grenade launchers; these (and the 40mm variety) are the large-bore guns you see cops swaggering about with at protests. Those of the 37mm variety are most often smoothbore (not rifled: they don't make their projectile spin, which means they are less accurate). There are 40mm grenade launchers. These look the same, but most are rifled, making them more accurate and also illegal for civilian use. Often at protests you will see what look like gigantic revolvers: these are called "multi-launchers" and come in either 37 or 40mm. They can fire all five or six shots in about three seconds. They come with folding and non-folding shoulder stocks. The original multi-launcher model is the ARWEN, designed in England and manufactured by Police Ordinance (a private company) in Canada.

These grenade launchers can fire chemical weapon canisters, baton rounds, muzzle-blasts, rubber balls, or even flares and, of course, grenades. See the "Projectiles" section for more information (page 22).

Then there are 12 gauge shotguns. The short (14"-20") barrel shotguns that police carry are called riot shotguns and they differ from military shotguns mostly in name, barrel-length, and stated purpose. A large number of less-lethal rounds have been designed to fit into a 12ga, although most prevalent are rubber balls and bean bag rounds. Because these shotguns can also fire traditional ammunition, some police agencies have color-coded their shotguns in neon colors to distinguish that they are intended to be loaded with less-lethal ammunition.

And finally (of the common varieties) are pepperball guns. These are intended for use with pepperballs (page 25), surprisingly enough. The ones I've seen look a lot like paintball guns, which is more or less what they are. They are effective at target fire within 60' and gas dispersion within 200'. They can shoot single, 3-round burst, semi-automatic, and the TAC-700 can enter fully-automatic mode in which it would be able to fire 700 rounds per minute. Its hopper only holds 200, but external ammo feeds are available. They fire at about 350fps (feet per second), a higher velocity than is used for paintballs.

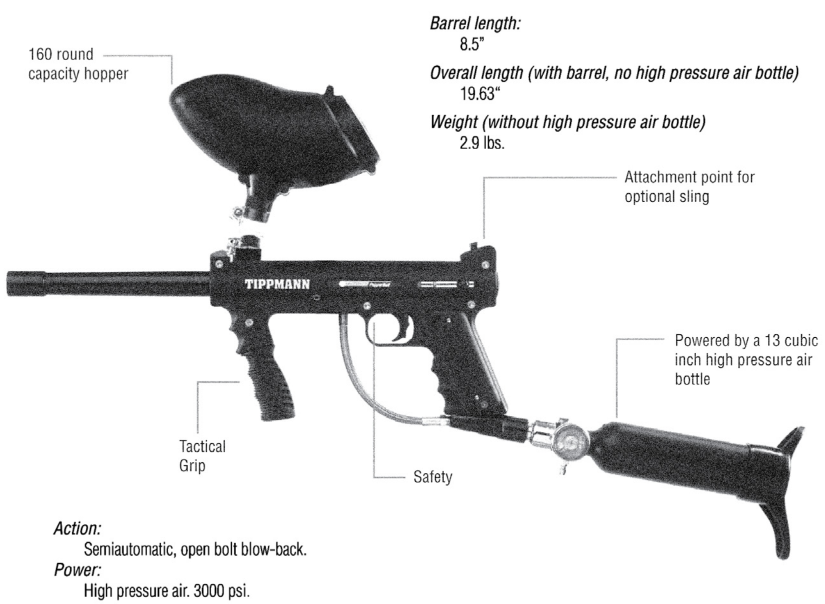


diagram of the PepperBall Custom Carbine Launcher

MELEE

Batons

Batons come in a lot of styles. There are straight, solid batons made of wood, plastic, and metal. There are collapsible straight batons (often called asps, although ASP is actually a brand name). The collapsible baton is generally preferred for day-to-day use over the solid baton because the officer doesn't need to take it off to sit on their ass in their cruiser and eat donuts. Straight batons don't take much training to use; you just hit people with them, often in the head. Other targets are collarbones, hands, wrists, elbows, knees. Straight batons are effective weapons at medium distance (well, medium for melee) but are much less effective in very close quarters.

Which is where the side-handle baton comes into things. These batons, usually around 24", have a short side handle about 6" from one end. This is the western adaptation of the tonfa, a Japanese weapon (though the tonfa wielder usually uses two of the weapons). These are considered a more "defensive" weapon and were partly adapted due to the bad media from the vast number of beatings that cops laid down on civil rights protestors. These can be held by the side handle, letting the length of the baton run down the forearm to the elbow. This position is used for blocking blows and for delivering pain compliance holds. They also can be held by the base and the side-handle used as a sort of a hilt, catching blows from an enemy's weapon. The side-handle baton, which also



from left to right: ASP, one-piece plastic side-handle baton, collapsible aluminum baton, rapid-rotation baton. (not to scale)



Bolo

Some company (specifically, ALS Technologies), decided to shoot 3 rubber balls connected by 12" of cord out of a 12ga shotgun. It has an effective range of 20-40 yards and is probably pretty rare. Used for capturing a running target.

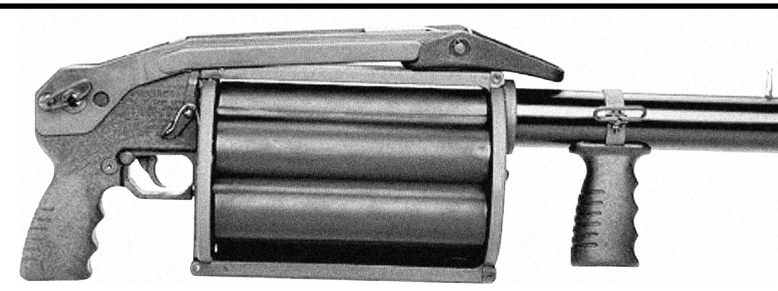
Flash-bangs

Flash-bangs are distraction grenades that are either thrown or launched from a riot gun. They spit out a 175db bang (plenty loud enough to damage your hearing) and flash so brightly that your retinas don't take in anything else for about 5 seconds. It's like the world is a movie on pause. Police like to use these before they charge, and they are unfortunately effective at routing crowds. Just remember: don't run just because of some really loud noise.





Number of Shots:	1
Action:	Single or double
Barrel Length:	14 inches (35.6 cm)
Overall length:	28 inches (71.1 cm)
Weight:	6.75 lbs. (306 kg)
Frame:	One piece steel
Grip:	Polymer - full shoulder
Finish	Matte Black
Warranty:	4 years from Date of Purchase



Operating System:	Revolver type motor driven magazine with mechanically operated magazine stops
Safety:	Trigger Lock Out of line percussion cap to firing Trigger-pull brings percussion cap (round) into line with firing pin before releasing hammer
Capacity:	6-shot maximum - **All 37/38 mm ammunition up to 8 inches (208 mm) in length**
Overall length:	Folding Stock - Closed 20.55 inches (52.1 cm), Open 31.5 inches (80.mm) Fixed Stock - 32.75 inches (83.2 cm)
Weight Unloaded:	9 lbs.
Barrel	Length - 9 inches (22.9 cm), Smooth Bore
Headspace:	0.150-0.154 inches (3.8-3.9 mm)
Ejection:	Shells drop out when frame is opened and tilted downward; sticky shells can be extracted by hand (*Caution - shells may be hot)
Rate of Fire:	Maximum of six rounds in three seconds
Warranty:	1 year from Date of Purchase

various technical specifications of Defense Technology's 40mm Launcher (top) and 37mm Multi-Launcher (bottom)

Sprays

Chemical weapon sprays are used to spit out CS, CN, OC, and PAVA gasses at crowds. In the USA, it's mostly CS and OC. These come in all varieties, from the concealable "undercover" models to ones that look like small fire extinguishers, to converted flamethrowers with backpack fuel supplies. In protests, expect mostly smallish canisters powered by nitrogen or "134a", a chemical commonly used as a refrigerant. Regardless of spray pattern, it seems like most pepper spray is advertised as having an effective range of 10-12 feet. (With some reaching only 3-4 feet).

More important than the actual sprayer is its spray pattern. There are five major spray patterns: stream, foam, cone, fog, and microspin.

Stream spray is just that: a thin stream. It is aimed at individuals, generally aiming for the eyes. It isn't considered particularly effective at stopping groups. The stream also gets less into your lungs, reducing how much it causes difficulty breathing. Some police call this a good thing, others a bad thing.

Foam is pepper spray that is encapsulated in a surfactant and turned into, well, a foam. The idea is that it is less prone to being blown around by the wind. It contaminates the target more completely (and is harder to clean, apparently), but it gets less of the surrounding area.

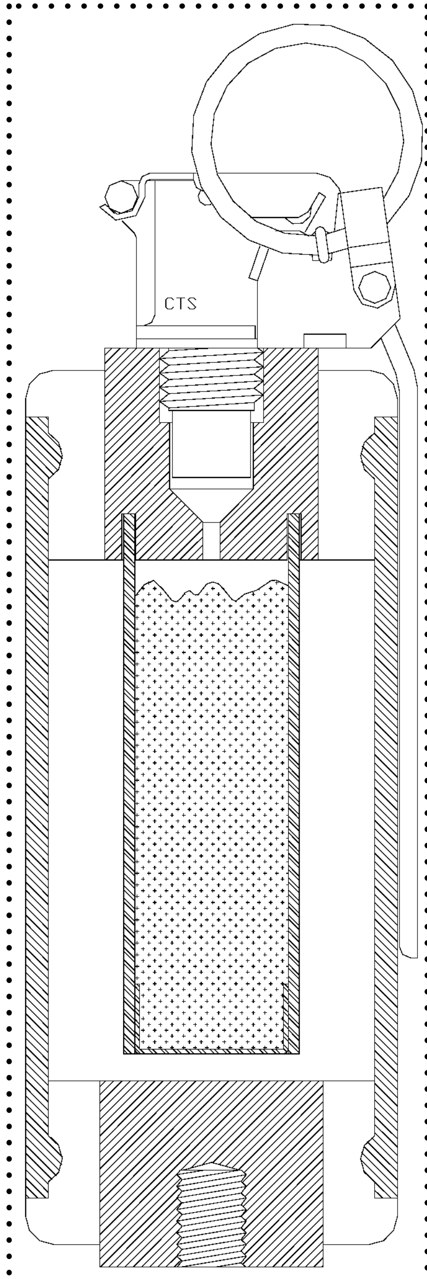
Cone pepper spray is what the Portland Police simply adore. This is the "fire extinguisher" spray that spits out in a widening cone and is used to soak entire lines of protestors. Cones are less accurate and more prone to catching other officers as well.

Fog pepper spray is the logical conclusion of this progression, and it's a fog that gets pretty much everyone. Cops are supposed to be wearing masks before they dispense this stuff.

Then there's the new "microspin" developed by ZARC for their VEXOR (who comes up with these names?) pepperspray. The pepper spray itself is significantly heavier than traditional pepper spray, reducing its susceptibility to wind. The stream itself is rifled, providing better aim. The stream (and it is indeed a stream) spreads out into an oval that is intended to envelop the face. They claim that it is safe enough to use indoors and is immune to blowback.

Pepperballs

Pepperballs are essentially paintballs filled with PAVA. These are from PepperBall Technologies Inc. and are fired from specialized launchers (page 18). The live ammunition balls are red. Green balls are actually paintballs and are used for identification purposes. Solid white balls are intended to shatter (and shatter themselves upon impact with) glass, intended for use against suspects in cars.



cutaway of non-launchable flash-bang grenade

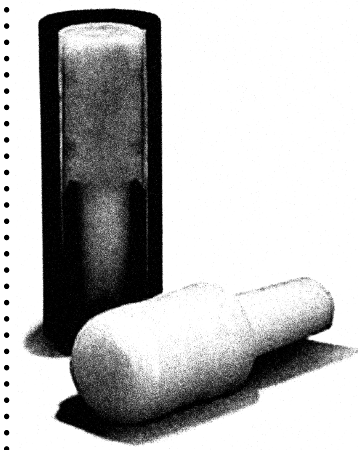
Pepperballs are intended for "stand-off" situations when the cops don't want to approach and don't want to be approached but still want to shoot you with crap.

I've seen one these knock a protestor off of a fence they were holding onto, caught by surprise. But the same protestor climbed back up and successfully held on (wearing goggles and bandanna) as they were shot again and again with the crap, so these really aren't that frightening to the prepared protestor. I've been shot with one myself, and I don't remember it hurting. But then again, I was wearing a thick jacket and was pumped full of adrenaline. My friends report pretty serious welts.

And of course, the Boston police shot a woman in the eye with one of these in 2004 and killed her.

to be fired low-trajectory or skip-fired and have an effective range of around 75-105 feet (at least, this was the range of the ones we read about. Other brands and types might differ). They also come in multiple-baton rounds, in which each shot fires 3-5 different projectiles for use against groups. They are fired from 12ga, 37mm, or 40mm. Some foam varieties are also soaked in, you guessed it, OC or CS gas. Further, some have paint to mark subjects for later identification and/or arrest.

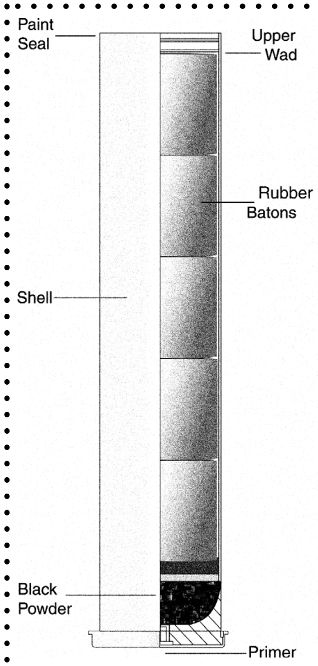
"Rubber bullets", by the way, are essentially baton rounds fired from traditional guns.



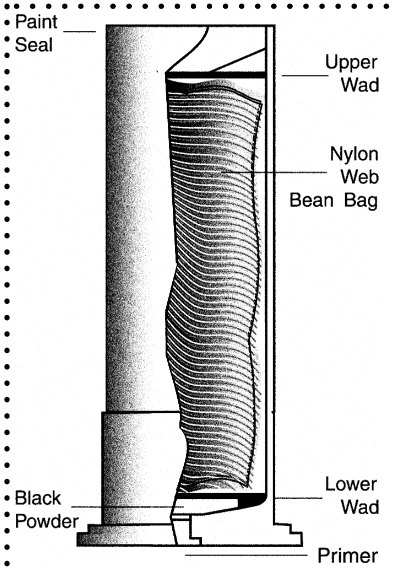
cutaway of a plastic baton round

Bean Bags

Used at short to medium range (20-30') and fired directly, bean bags are nylon bags filled with silica sand. Occasional deaths have resulted when subjects are shot in the chest or neck.

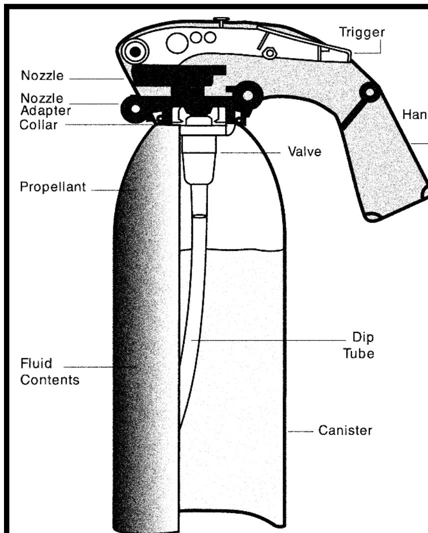


37mm 5-baton round



37mm bean bag round





Material:	Aluminum (seamless construction) Part 178.33a Specification 2Q	
Height:	9.15 inches	23.2 cm
Diameter:	2.60 inches	6.60 cm
Warranty:	2 years from date of manufacture	

	First Defense®	Pepper 10™	5.5% Pepper Mace®
Delivery System	HV STREAM	–	FOG
Propellant	Nitrogen	–	134a*
Formulation Weight	12.0 oz. 340 g.	–	17.4 oz. 493 g.
# of 1-sec bursts	6-8	–	14-18
Effective Range	10-12 feet	–	10-12 feet
Part ID	5099	–	9005

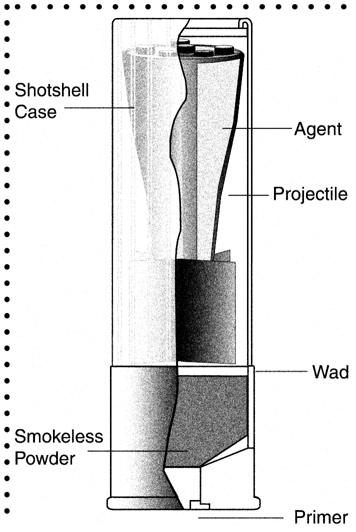
	Pepper Foam™	Mace® OC/CN	Mace® OC/CS	Mace® CN	Mace® CS	Bodyguard® LE-10
Delivery System	FOAM	FOG	FOG	FOG	FOG	FOG
Propellant	134a*	134a*	134a*	134a*	134a*	134A*
Formulation Weight	14.3 oz. 405 g.	17.4 oz. 493 g.	17.4 oz. 493 g.	17.4 oz. 493 g.	17.4 oz. 493 g.	13 oz.
# of 1-sec bursts	6-8	14-18	14-18	14-18	14-18	6-8
Effective Range	10-12 feet	10-12 feet	10-12 feet	10-12 feet	10-12 feet	
Part ID	9040	9000	9030	9010	9020	

an assortment of Sabre peppersprays (top) and various technical specifications of the MK-9 Aerosol Projector

PROJECTILES

Chemical Weapon Canisters

There are three basic types of gas canisters. There are regular old pyrotechnic gas canisters, which are gun-fired grenades that expel a gas (usually CS, but CN and OC are available as well) in the same manner as a smoke grenade. These are cylinders of sheet steel with emission holes at the top and bottom. They are pyrotechnic—that is to say, they burn to emit the gas. They are hot enough to the touch to scald or burn bare skin, and thick gloves are advised for handling live teargas canisters. Note that throwing a tear gas canister will seriously douse you in the crap, of course.



Ferret-12 fin-stabilized 12ga shell

Literally owing to this "throwback potential," as the manufacturers refer to it, scattershot canisters have been developed. These split into 3-5 separate canisters upon firing and cover a larger area.

Then there are "ferret" rounds, which are unlikely to be encountered in protest situations. These are used to penetrate barricades such as doors and windows to disperse chemical weapons and force the target out of their defensive position. They are non-pyrotechnic: they use the velocity of impact to rupture the seal on and disperse their payload. These are controversial, because a direct shot, through a door or whatnot, can easily kill a person.

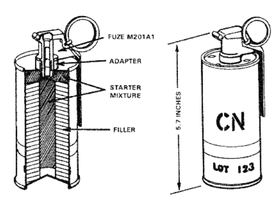


diagram of a tear gas canister

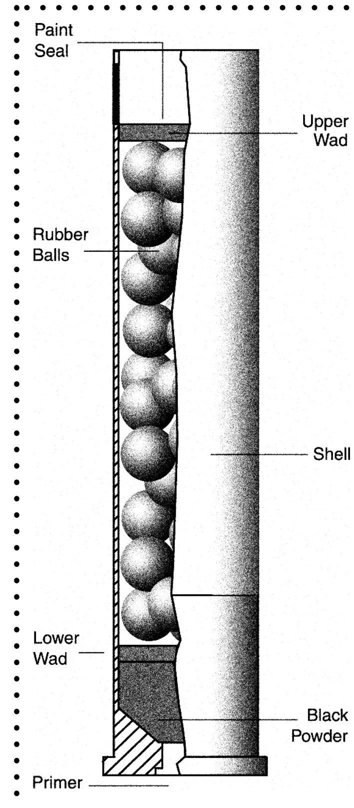
Muzzle Blasts

Essentially, a muzzle-blast is a short-range blast of CS, CN, or OC gas directly from the barrel of riot gun (12ga, 37mm, or 40mm). They appear to have a maximum effective range of between 10 and 30 feet.

Rubber Balls

Rubber balls are packed into shells and canisters and then shot out in the way that buckshot is fired from a shotgun. These are fired from 12ga, 37mm, or 40mm, and come in multiple calibers (representing the size of the balls). They are not intended for single targets but instead for pain compliance on an entire crowd. They are supposed to be either skip-fired (fired at the ground and intended to bounce) or fired at a low trajectory; they are considered unsafe to fire where they might go above the target's breast line. The effective range of these weapons is about 50 yards.

They also come in grenade form (Stinger is one brand of these balls, but it is a different brand than the Stinger brand of stun gun, I believe). The grenades can either be thrown by hand or launched from a riot gun, and some types come with CS, CN, or OC gas packed in there as well.



37mm, 60 caliber Stinger rubber ball round

Baton Rounds

Baton rounds are big thick discs or cylinders of wood, foam, rubber, or plastic and can cause fairly grievous bodily harm. They are often fired at joints to disable protestors. It doesn't matter how tough you are, a point-blank wooden dowel fired at your knee is going to keep you from running. Usually, however, long-term effects are limited to severe bruising and pain. These are intended